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| APPLICATION NO | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO | CONFIRMATION NO |
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| 09/147,721 | 02/24/1999 | RUFUS L. CHANEY | P8172-9005 | 2098 |

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| EXAMINER |
|---|
| IBRAHIM, MEDINA AHMED |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1638 | 21 |

DATE MAILED: 07/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 09/147,721 | Applicant(s) CHANEY ET AL. | |
|---|---|---|---|
| | Examiner Medina Ibrahim | Art Unit 1638 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *22 April 2002 and 07 May 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) *1-10 and 13-17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 13-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 04/25/02 has been entered.

Claims 1-10 and 13-17 are pending and are under examination.

The amendments of 13 November 2001 and 7 May 2002 have been considered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### *Claim Rejections - 35 USC § 112, 2nd paragraph*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 13 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 13, "genus" should be replaced with ---species----. Also, the species should be in italics. Dependent claim 16 is included in the rejection.

### *Claim Rejections - 35 USC § 102/103*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13-14 and 16-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over each of Morrison et al (Plant Science Letters, vol. 17, pp. 451-457, 1980), Brooks et al (Proc. R. Soc. Lond. B. 203, 387-403, 1979), or Homer et al (Plant and Soil, vol. 138, pp. 195-205, 1991), all from Applicants' IDS).

Claims are drawn to a nickel hyperaccumulating plant of Alyssum species such as A.argentteum, A.tenium, and A.murale having a concentration of more than 1000 mg/kg or at least 2.5% of nickel in its above ground tissues, having another metal including Co in said ground tissue, and wherein the plant is produced by a specific method.

Morrison et al disclosed the nickel hyperaccumulators of the Alyssum species of A.argenteum, A.tenium, and A.mural. These hyperaccumulators were grown on a substrate containing 30-10, 000 ug/g nickel or on a serpentine soil. The nickel content in the dried leaves of one of the species reached 10,000ug/g. The reference also disclosed that the nickel content in dry leaves was in function of the nickel content of the soil (see at least the Summary). Since serpentine soil also contains Co and other metals, Morrison's hyperaccumulator plants are

expected to contain Co and other metals in its above ground tissues. Applicants should note that the method of producing the plant does not confer distinguishable property to plant itself. Therefore, the claimed plant is anticipated by or, in the alternative, is obvious over the prior art.

Homer et al disclosed hyperaccumulations of Ni and Co by several Ni- hyperaccumulator Alyssum species including *A. Heldreichii, A.murale, and A.pintodasilvae, and A.tenium* plants (see at least page 195, the Abstract). The concentration of Ni accumulated in the leaves range from 1000 to 8000ug/g. Therefore, the claimed plant is anticipated by or, in the alternative, is obvious over the prior art.

Brooks et al teach identification of Ni-hyperaccumulators from Alyssum species including *A. Heldreichii, A.murale, and A.pintodasilvae, and A.tenium* (see page 394, Table 2). The reference also teaches that leaf Ni-concentration of *A.pintodasilvae* reached 14, 400 ug/g when cultivated with 3200 ug/g of Ni in the growth medium (see paragraph bridging pages 396 and 397). Therefore, the claimed plant is anticipated by or, in the alternative, is obvious over the prior art.

See *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), which teaches that a product- by-process claim may be properly rejected over prior art teaching the same product produced by a different process, if the process of making the product fails to distinguish the two products.

Therefore, the burden of proof is upon the Applicant to show an obvious distinction between the claimed plants and the plants of the prior art. See In re Best, 562F.2d 1252, 195 USPQ 430 (CCPA 1997).

Claims 1-10 remain rejected and new claims 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaney et al (US 5,711,784, filed June, 1995). The rejection is repeated for the same reasons of record. Applicants' arguments filed in the response of 11/15/01 have been fully considered but are not persuasive.

Contrary to Applicant's arguments in page 8 of the response of 11/15/01, the specifically claimed soil conditions of soil pH " below about 7.0" and Ca concentration of "from about 0.128-about 5mM", and the ratio of exchangeable Ca/Mg of "about 0.16-0.40" are either within the range or obvious over the soil conditions disclosed by Chaney et al. Chaney disclosed a soil pH of 4.5-6.2, an exchangeable Ca concentration at 20% less than the exchangeable Mg concentration, which allowed selected species of Alyssum to accumulate a Ni concentration of 2.5 to 5% (dry wt.) in its leaves. Therefore, a mere variation of these conditions to reach an optimum soil conditions for higher accumulation of Ni would not result in unexpected results. Therefore, the rejection is maintained.

***Double Patenting***

Claims 1-10 remain rejected and new claims 13-17 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 5,711,784. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are both drawn to the phytomining of nickel with Alyssum species. The rejection is repeated for the same reasons set forth in previous Office actions.

No claim is allowed.

Papers relating to this application may be submitted to Technology Sector 1 by facsimile transmission. Papers should be faxed to Crystal Mall 1, Art Unit 1638, using fax number (703) 308-4242. All Technology Sector 1 fax machines are available to receive transmissions 24 hrs/day, 7 days/wk. Please note that the faxing of such papers must conform with the Notice published in the Official Gazette, 1096 OG 30, (November 15, 1989).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Medina A. Ibrahim whose telephone number is (703) 306-5822. The Examiner can normally be reached Monday -Tuesday from 8:00 AM to 5:00 PM and Wednesday-Thursday from 9:00AM to 3:00PM

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amy Nelson, can be reached at (703) 306-3218.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 308-0196.

July 4, 2002
mai

ELIZABETH F. McELWAIN
PRIMARY EXAMINER
GROUP 1600